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Potent and untested drugs sold as ‘dietary supplements’

Andreas Kimergård *Principal Research Fellow*¹, Chris Walker *Senior Analyst*², David Cowan *Professor*²

¹National Addiction Centre, King’s College London, London, UK; ²Drug Control Centre, King’s College London, London, UK

Correspondence: Andreas.Kimergard@kcl.ac.uk

A new challenge to public health has emerged in recent years from potent and untested drugs being sold under the guise of being ‘dietary’ supplements [1-4]. Fuelled by growing demand for products promising a better body, enhanced performance, and increased well-being, this trend highlights creative marketing strategies used in the illicit supply of drugs.

Nine supplements suspected of containing drugs were analysed as part of investigation for the television programme *Spotlight* (Broadcasted 31 March 2015 by BBC Northern Ireland). The supplements were bought from high-street shops and from an e-commerce site (Table). Products were sold as ‘fat burners’ or ‘pro hormones’, with packaging often blatantly listing chemical names of drugs.

Ostarine belongs to the group of selective androgen receptor modulators (SARMs) and was found in Product 4. Ostarine is being tested as a medicine, but has not been authorised for marketing. The stimulant 1,3-dimethylamylamine (DMAA) was found in Product 1 and Product 2, and 1,3-dimethylbutylamine (DMBA) was found in Product 3 and Product 8. DMAA was recently identified in ‘dietary supplements’ and has been associated with adverse events, including acute myocardial infarction, strokes, and deaths [4]. Since regulators have removed DMAA from the market, an analogue DMBA has appeared as a replacement [3]. Products 6, 7, and 9 contained anabolic steroids, some of which have been associated with hepatotoxicity [2]. Although advertised as legal ‘pro hormones’ they are controlled drugs in the UK.

These findings illustrate developments on the market, which now includes 'dietary supplements' containing medicines, 'legal highs', and controlled drugs. Many experienced users are aware of this marketing strategy. However, young or otherwise inexperienced people may be unknowingly exposing themselves to potent drugs. Clinicians should ask patients about the use of 'supplements' and report suspected adverse events to medicine agencies.

Competing interests: None declared.

References

1. Evans-Brown M, Kimergård A, McVeigh J, Chandler M, Brandt SD. Is the breast cancer drug tamoxifen being sold as a bodybuilding dietary supplement? *BMJ* 2014; 348:g1476.
2. Abbate V, Kicman AT, Evans-Brown M, et al. Anabolic steroids detected in bodybuilding dietary supplements—a significant risk to public health. *Drug Test Anal* 2015; 7:609–18.
3. Cohen PA, Travis JC, Venhuis BJ. A synthetic stimulant never tested in humans, 1,3-dimethylbutylamine (DMBA), is identified in multiple dietary supplements. *Drug Test Anal* 2014; 7:83–7.
4. Cohen PA. DMAA as a dietary supplement ingredient. *Arch Intern Med* 2012; 172:1038–9.

Content of nine dietary supplements bought on the high-street and internet

Product No	Label	Content
1	Strip Ts ^a	Caffeine, 1,3-dimethylamylamine (DMAA), synephrine
2	Strip Ts ^a	Caffeine, 1,3-dimethylamylamine (DMAA), synephrine
3	Angel Dust	Caffeine, 1,3-dimethylbutylamine (DMBA)
4	Ostapure	Ostarine
5	Hemo Rage	Caffeine, synephrine
6	SD Extreme	Methasterone
7	Metha-Quad Extreme	Methylstenbolone, methasterone, 13-ethyl-3 methoxy-gona-2,5(10)- dien-17-one.
8	Mutant Noxx Mass Power Blend	Caffeine, 1,3-dimethylbutylamine (DMBA)
9	M1T Hulk XT	Methyl-1-testosterone

^a Same product bought from two different shops.